Space Weather Forecast

Issued on Tuesday, 11 January 2022 at 00:48 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of G1 Minor Geomagnetic storms on day 4 (14th).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Very Low over the past 24 hours, with only background flares. There are currently four sunspots on the visible disc. The most notable is a large but stable and magnetically simple region in the southwest. The other spots are all small, simple and mostly stable with one newly formed but very small bipolar sunspot showing growth. This remains an unnumbered region, in the northwest.
No Earth-directed Coronal Mass Ejections (CMEs) have been observed.

Solar Wind / Geomagnetic Activity: Solar winds speeds have slightly elevated, though easing back from 470 km/s to just above 400 km/s, as the influence of a coronal hole wanes. The strength of the magnetic field carried by the wind was weak, with the important north-south component also only weakly varying. Geomagnetic activity was Quiet to Unsettled (Kp 0-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to remain Very Low, with a chance of common-class flares. There is a slight chance of Moderate flares, with an increasing chance day 2 (12th) onward, as the sunspots on the far-side that are currently producing visible CMEs rotate around the eastern limb and onto the Earth-side.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. The ongoing slightly elevated speeds due to Earth being in the faster solar winds from a coronal hole will gradually ease, with no further notable enhancements expected until later on day 4 (14th) when the fast wind from another coronal hole may connect with Earth. Geomagnetic activity is forecast to be Quiet to Unsettled until later on day 4 when Unsettled to Active intervals are expected and a chance of Minor geomagnetic storms.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background with no solar radiation storms occurring.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	30
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	15	20	20
Very Active	R3 to R5 X	No	1	2	2	2

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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